

A NEW SPECIES OF *COURSETIA* (FABACEAE: ROBINIEAE)  
FROM THE CHIHUAHUAN DESERT, MEXICO

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ABSTRACT

*Coursetia insomniifolia* is herein described from Coahuila, Mexico. It is the only member of the genus to inhabit the Chihuahuan Desert, and its relationship with other species of *Coursetia* is obscure. *Coursetia axillaris* and *C. glandulosa*, both inhabitants of northern Mexico and adjacent U.S.A., are probably its closest relatives.

During the course of a systematic revision of *Coursetia*, I detected an undescribed species in the form of a specimen collected by Thomas Van Devender in 1984 from Mexico. Initially I was not certain of the identity of the specimen, so I tentatively referred it to an undescribed species of *Genistidium* I. M. Johnston, an endemic genus of the Chihuahuan Desert. It was only after subsequent field investigations that I was able to conclude that the plant was a member of the genus *Coursetia*.

*Coursetia insomniifolia* Lavin, sp. nov.

*Coursetiae axillari* accedens sed foliis lineari-ellipticis raro 2 saepe 4, ovariis glabris, rachidibus racemorum 0.2–4 cm longis, ramis nonfloriferis intricate ramosis apicibus debiliter spinosis (Fig. 1).

Shrubs 0.2–1.5 m high. Stems intricately branched, greenish, borne from a thick, knotty root system; branches glabrous, young growth with a whitish, finely appressed indumentum, the distal ends blunt to spine-tipped. Leaves paripinnate, 0.4–1.5 cm long, petiole and rachis canaliculate, exstipellate; leaflets (2)4 per leaf, linear-elliptic, 4–15 mm long, 1–3(4) mm wide, finely sericeous, rounded-apiculate distally, usually readily caducous from the persistent rachis; stipules subspinescent, 1–2 mm long; stipels obsolete. Inflorescence of axillary racemes, rachis of raceme 0.2–4 cm long, bearing at most 1 flower at anthesis per day; floral bracts linear, subulate, persistent to caducous, 1 mm long. Flower with a pedicel 1.5–2.5 mm long; calyx sericeous, the tube 2.5–3.5 mm deep, the lobes 2–3 mm long, triangular acuminate; petals all clawed, yellow; banner orbicular, emarginate, 7–9 mm long, gradually contracted into a short claw, aging slightly reddish, calluses and inflexed auricles slightly devel-

oped; keel 7–9 mm long; wings 7–9 mm long; staminal tube 9+1 diadelphous; ovary nearly glabrous with 6–9 ovules; style 6–8 mm long, hairy the distal one-half to full length. Legume glabrous, 1–9 seeded, 1–3 cm long, 3.5–4.5 mm wide. Seeds 2.4–3.5 mm diameter, mottled, accumulating canavanine (here reported). Chromosome number  $n = 8$  (here reported from *Lavin et al.* 5732).

TYPE: Mexico, Coahuila, Puerto de Ventanillas, 42 km n. of San Pedro along Hwy 30, 26°02'34"N, 102°44'23"W, 1450 m, 18 Oct 1985, *Lavin, Nesom and Scott* 5732 (Holotype: MEXU; isotypes: ARIZ, MO, NY, TEX, US).

PARATYPE: Mexico, Coahuila, Puerto de Ventanillas, 25 mi ne. of San Pedro on Mexico Hwy 30, 25 Oct 1984, *T. Van Devender et al.* 84-577 (TEX).

*Distribution.* *Coursetia insomniifolia* is known only from the type locality and vicinity in Coahuila, Mexico (Fig. 1). The population at this locality is large and has a great diversity in age-class. The plants are restricted to sloping limestone bed-rock where they are dominant with *Agave lechuguilla* Torr., *Heteropogon contortus* (L.) Beauv., *Janusia gracilis* A. Gray, *Carlowrightia serpyllifolia* A. Gray, and *Opuntia* spp.

*Discussion.* The single known population was in flower and fruit in late October of 1984 and 1985. Flowering apparently begins with fall rains during September and continues through October.

The seedling morphology is typical of the genus: germination is epigeal; the cotyledons are foliar; the eophyll is unifoliate; the metaphylls are similar to mature leaves; and the leaf rachis of all leaves is canaliculate and exstipellate. Axillary branching occurs very early during development with the base of the branch being very thick (grown from seed of *Lavin et al.* 5732).

I originally thought *Coursetia insomniifolia* pertained to *Genistidium* because both 1) are multi-branched shrubs with photosynthetic bark, 2) possess small leaves with leaflets that have inconspicuous venation and do not undergo nyctinastic movements, 3) have yellow flowers of approximately similar dimensions, and 4) occupy a similar geographic region (Fig. 1). *Coursetia insomniifolia* differs most notably from *Genistidium*, however, by 1) its 4-foliolate, paripinnate leaves (i.e., lacking a terminal leaflet), 2) the inflorescence that is an indeterminate, simple, axillary raceme, and 3) the legume with an endocarp that at maturity forms a compartment for each seed. The latter two features are unique to *Coursetia* (*Lavin in press*). *Genistidium* possesses 1–3 foliolate leaves, an inflorescence that is reduced to a single (rarely two) axillary flower, and a legume with an endocarp that does not compartmentalize the seeds. Although the chromosome number of *Genistidium* ( $2n = 16$ , Goldblatt 1981) is the same as that for *Coursetia*, the similarities of *C. insom-*

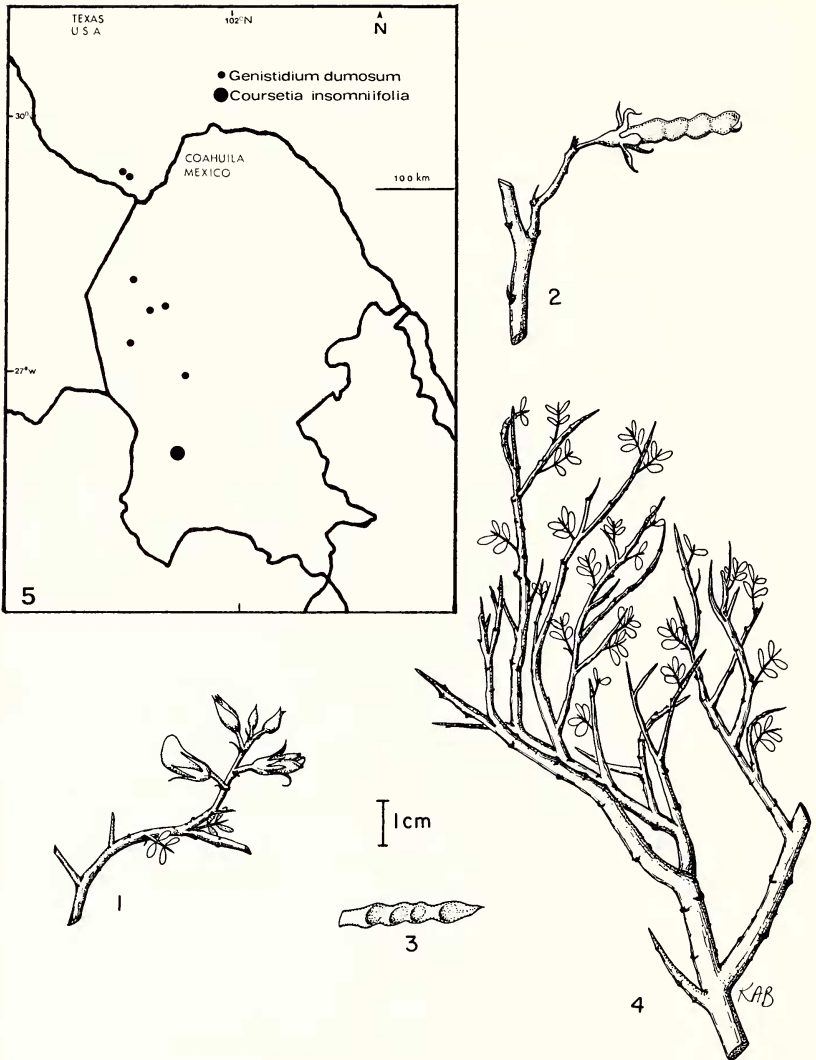


FIG. 1. *Coursetia insomniifolia*. 1. Inflorescence. 2. Infructescence. 3. Inside of pod valve showing seed compartments. 4. Habit. 5. Distribution.

*niifolia* and *Genistidium* are perhaps the result of convergence. The possibility of a close relationship between *Genistidium* and *C. insomniifolia* remains unknown, but the reduction of the inflorescence, pod, and leaves of *Genistidium* precludes such inferences from these characters.

*Coursetia insomniifolia* is readily distinguished from all other species of the genus by its very small, 4-foliolate leaves. Such leaves are rivaled only by the distantly related *Notodon*, a Cuban genus

that also possesses small, 4-foliolate, paripinnate leaves. *Coursetia insomniifolia* is named for its leaves that do not undergo nyctinastic movements (i.e., "sleep movements"). All other species of the genus that possess paripinnate leaves have a peculiar type of evening leaf movement in which the leaflets fold back strictly along the rachis exposing only the abaxial surface.

*Coursetia insomniifolia* also possesses subspinescent stipules and flowers that are yellow at anthesis, two features that are otherwise unknown in Mexican *Coursetia*. This species probably has its closest relatives in *Coursetia axillaris* Coult. & Rose and *C. glandulosa* A. Gray; both species are inhabitants of northern Mexico and adjacent U.S.A. This supposition, however, is based only on the paripinnate leaf condition and the similarity of their geographical ranges.

#### Key to Mexican *Coursetia* with Paripinnate Leaves

1. Leaflets (6)8–22 per leaf, orbicular-elliptic; mature leaves 2.5–6 cm long; flowers predominantly whitish at anthesis; racemes commonly several per leaf axil and clustered on short shoots; anthesis occurring before the leaves.
  2. Inflorescence, ovary, and pod glandular-sericeous; axillary short shoots bearing 2–4 racemes; shrubs and trees with long slender stems, 1–8 m long; Pacific cordilleras from Arizona s. to Oaxaca . . . . . *C. glandulosa* A. Gray
  2. Inflorescence, ovary, and pod white sericeous; axillary short shoots bearing 1–2 racemes; short, commonly gnarled shrubs of the Tamaulipan thorn-scrub of ne. Mexico and adjacent Texas . . . . . *C. axillaris* Coult. & Rose
1. Leaflets (2)4 per leaf, linear-elliptic; mature leaves 0.4–1.5 cm long; flowers yellow at anthesis; racemes single in leaf axils; anthesis occurring with mature leaves; Chihuahuan Desert . . . . .  
 . . . . . *C. insomniifolia* Lavin

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#### LITERATURE CITED

- GOLDBLATT, P. 1981. Cytology and the phylogeny of the Leguminosae. In R. M. Polhill and P. H. Raven, eds., *Advances in legume systematics*, part 1, p. 427–463. Royal Botanic Gardens, Kew.
- LAVIN, M. (in press). A cladistic analysis of the tribe Robinieae (Papilionoideae, Leguminosae). In C. H. Stirton, ed., *Advances in legume systematics*, part 3. Royal Botanic Gardens, Kew.